



the **ILLINOIS ENGINEER**



Arthur Beazley, winner of the NSPE Armco engineering scholarship, is congratulated by Illinois Governor, William G. Stratton. (Story and other pictures on Pages 14 and 15).

THE ILLINOIS ENGINEER
JUNE, 1959
VOLUME XXXV, NO. 6



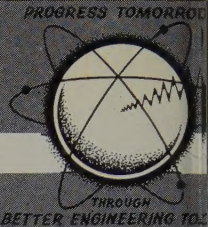
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The ILLINOIS ENGINEER is published monthly by the Illinois Society of Professional Engineers, Inc., at 817 Myers Building, Springfield, Illinois.

The Illinois Society of Professional Engineers is not responsible for statements made or opinions expressed in this publication.

Second-Class postage paid at Springfield, Illinois.

Subscription rates are \$2.00 per year in advance to members of the Illinois Society of Professional Engineers. \$4.00 per year in advance to non-members in U.S.A. and its possessions, Canada, and Mexico. Foreign \$6.00. Single copies 40¢ Special issues \$1.00.

PRESIDENT'S MESSAGE

By D. S. MAGOWAN

The 74th Annual Convention was held at Rockford, April 30, May 1 and 2, 1959. The total registration of 371 was gratifying. May we do better at our 75th.

The convention for the first time was sponsored state wide with three chapters acting as host, Rock River, DuKane and Rockford. The convention was kept on schedule and the results were so good that the Board of Directors passed a resolution that the 75th convention be handled by a State Committee. The Ladies auxiliaries from the same chapters took care of the activities for the ladies and from all reports did an excellent job of planning and executing the program.



Donald S. Magowan

One event was the Wheelbarrow Parade with the winning membership chairmen from the chapters riding while the losing membership chairmen did the pushing. The results of the membership campaign for the past year are very good and it is the wish of your new officers that we produce an even better record next year.

During the coming year your officers wish to improve the communications between the chapters and the State office. We have a very competent office staff at our Springfield headquarters and I am sure that all correspondence will receive not only a prompt reply but also a well thought out answer to all your questions. It is very important that the Chapter secretaries let the main office know of your activities so that they may be reported in the ILLINOIS ENGINEER.

At the Board meeting I stressed the point that your National Directors devote much time and thought to your organization and are well versed on all phases of ISPE and NSPE. They travel far and wide to attend the National meetings and are willing and able to attend some of your Chapter meetings and give you the benefit of their knowledge in regard to some of the accomplishments of our organization. Won't you please invite them to participate in your meetings.

I also urge that you find time at your Chapter meet-

ings to take care of Chapter business. I realize that sometimes the programs are rather long but I believe that a good active Chapter will have business that should be transacted.

I am happy to report that in accordance with the By-Laws your Board employed Mr. Larry Goddard as Executive Director and Editor of the ILLINOIS ENGINEER for the coming year. The services of Mrs. Mary Watt as Office Manager and Assistant Editor were also engaged by the Executive Committee.

Editor's Note: President Magowan had a coronary attack on May 9 and was in Sherman Hospital, Elgin, until his return to his home last week. His recovery progress is satisfactory, but will require an adequate period for rest and recuperation.



New ISPE Chapter at Quincy to be called Western

At an organizational meeting on April 15, temporary officers were elected and are shown above, l. to r., Howard B. Brown, Secy.-Treas.; Richard C. Stegeman, Vice President; John W. Truethart, President; and W. C. Klingner, Chapter Representative. The Board of Direction on April 30 gave approval to Western's petition and constitution.

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CONVENTION VARIED AND SUCCESSFUL

The 74th Annual Convention at Rockford was privileged to hear four outstanding inspirational speakers from different fields of the engineering profession. Mr. James D. Piper, Vice President of Portland Cement Association, gave a most interesting and descriptive discussion of his visit to Russia last summer. He showed slides which illustrated the points he discussed comparing Russia's building program with that of the United States. He stated that Russia's buildings did not have the beauty of design of American structures but that basically they were of sound construction and that they utilized concrete and masonry extensively.

Dr. Clark Dunn, President of the National Society of Professional Engineers, gave a very enlightening discussion on the role of the engineer in industry. The complete text is printed elsewhere in this issue.



Paul Doll, Capt. R. B. Laning, and Dr. Clark Dunn.

Captain Richard B. Laning told of his experiences with the crew of the nuclear-powered submarine, the Seawolf, during its underwater record breaking voyage of 60 days last summer. He stated that the removal of the crew from their natural environment by remaining underwater for two months was a prelude to the problems that would be encountered in future space travel. He recognized the role of engineers for making it possible to accomplish the underwater record. He stated "You engineers made the job quite simple. The construction of the submarine itself was engineered for the purpose. The nuclear reactors were especially designed and built and even the problem of food storage and the preservation of it was accomplished by new engineering techniques." He gave an example of fillet mignon being

processed by a new electronic method which reduced its weight and size by removing moisture.

Paul N. Doll, Executive Director of the Missouri Society of Professional Engineers, captivated the Convention with his humorous home-spun remarks which brought out the facts concerning the accomplishments of the State Engineering Societies and the National Society. He compared Membership Dues of the engineers with that of the doctors, lawyers, and various labor groups, and in each case the cost to the other groups was two to three, and in some instances four, times as great as the combined dues for the engineers for local, state and national representation.



Convention visitors enjoy themselves.

Professional Society Dues:

	Engineering	Bar	Medicine
National	\$13	\$16	\$25
State	10	25	35
Local	3	30	15
	<hr/> \$26	<hr/> \$71	<hr/> \$75

Organized Union Dues:

Based On Missouri

Carpenters	\$72
Dump Truck Operators.....	60
Electrical Workers	72
Operating Engineers	72
Bartenders	48

Doll posed the question "where else can we get so much representation with so much accomplishment for the engineering profession with so little cost than in your engineering society?" On the humorous side Doll compared his home State of Missouri with Illinois. He compared figures of membership, which were almost parallel in the National membership standings. He stated that of all places in the world, because of gravity conditions, that the States of Missouri and Illinois were the only places that a plumb bob will hang perfectly straight. He said we do not consider Missouri as being across the Mississippi from Illinois but merely that both States are in the same water shed.

The Convention was hailed by all those in attendance as one of the most interesting and enjoyable that they had attended.

Actions that were taken are printed on page 6.



PROFESSIONAL ENGINEERING

We believe that man was created by Divine Power to be free—

To walk among his fellow men with his head held high.

To greet kings and paupers with equal sincerity.

To choose his life's work with no earthly control.

To educate himself to any extent and in any field chosen by him.

To support his loved ones in a respectable manner.

To use fully his skill and creativeness in helping others.

To be recognized for his personal ability and product.

To hope for peace and good will among all men.

To live in humility, recognizing need for Divine Guidance.

Believing that the engineering profession is fundamental to welfare and happiness of all people in all parts of the world.

And, believing that integrity of the individual engineer is the very foundation of the engineering profession.

This is professional engineering.

Written for I.S.P.E. Members 5/1/59
by Paul N. Doll, N.S.P.E.

ENGINEERS ATTEND SEMINARS

The Illinois Concrete Pipe Association in cooperation with the Portland Cement Association conducted a series of seminars on concrete culverts during the past six weeks. The programs were under the direction of Wayne Wallace, district engineer of P.C.A. Ted Dahlstrom, Executive secretary of the pipe association, assisted in the arrangements. Subjects of interest to engineers in highway construction were as follows:

Hydraulics of Culverts

Ralph Weaver, Conservation Bureau P.C.A.

New ASTM Specifications

Jack Guthrie, P.C.A., Chicago District

Loads on Trench Conduits

John Zaffle, Conservation Bureau, P.C.A.

Loads on Embankment Conduits

John Zaffle, Conservation Bureau, P.C.A.

Bedding and Backfilling Practices

William Lohwer, P.C.A. Chicago District

Each engineer attending received a useful kit containing a wealth of information on culverts. Design short-cut tables, installation criteria and specifications furnished are useful reference material for design, material, construction and maintenance engineers. The following publications and papers are included in the folder:

1. Culvert—Flow Characteristics
2. California Culvert Practice—Chart B
3. ASTM Specification C14-57
4. ASTM Specification C76-57T
5. Trench Loads and Concrete Pipe Supporting Strengths
6. Coefficients for Marston's Trench Load Formula
7. Embankment Conduit D-Loads for R/C Culvert Pipe
8. Design and Installation Criteria for R/C Pipe Culverts
9. Rigid Culverts Under High Overfills
10. Negative Projecting Conduits
11. Hydraulic Factors in Economics of Pipe Culverts.

The seminars were well attended in each of the state highway district areas and were counted so successful from the viewpoint of the engineers and the sponsoring associations that later programs of a similar nature are being planned. Mr. Dahlstrom advises that the Pipe Association has very good films and other type programs which can be made available to local chapters of I.S.P.E. Any chapter program chairmen who wish to avail themselves of this program offer should write to I.S.P.E. headquarters listing preferable times, and arrangements will be made.

ENHANCING THE ROLE OF THE ENGINEER-IN-INDUSTRY

By DR. CLARK DUNN, NSPE President

If one is to discuss the Engineer-in-Industry, it is desirable that the speaker and the listener attempt to start at the same point and travel with the same dictionary. To do otherwise would probably lead to as much frustration as the enebriated man giving directions to a stranger who was in search of the Post Office. As you no doubt all remember, after three or four false starts in describing the best route, our tipsy friend concluded, "You can't get there from here." Of course, you may also conclude after I have finished my discussion that I am much like a tugboat that whistles the loudest the denser the fog.

Suppose we agree that in my talk I will be discussing the engineer who has those qualifications that are roughly equivalent to an Engineer-in-Training or a Registered Professional Engineer. Please notice I did not say he was registered in either of these categories but that he was of that same general characteristic. In addition to these essential qualifications as a practitioner of the profession of engineering, I will assume that he has other characteristics that would cause him to travel the same second mile as described by Dr. William Wickenden when he said, "Every calling has its mile of compulsion, its daily round of tasks and duties, its standard of honest craftsmanship, its code of man-to-man relations which one must cover if he is to survive. Beyond that lies the mile of voluntary effort where men strive for excellence, give unrequited service to the common good and seek to invest their work with a wide and enduring significance. It is only in this second mile that a calling may attain to the dignity and the distinction of a profession."

It is also my assumption that these engineers generally conform to the attitudes toward their jobs indicated in the survey of "Career Satisfaction of Professional Engineers in Industry" made by N.S.P.E. It was found that in that survey the first requirement of a satisfactory job is "a job that is challenging related to the individual's talent." The second requirement is "the opportunity for advancement," and the third is "adequate financial reward." In order to further limit the items of discussion, I would call your attention to the published "Policy" of the National Society of Professional Engineers in which we urge that each member of the Society join the technical society which serves his particular field of practice. I will not therefore devote time to the technical aspects of the work of the Engineer-in-Industry in my discussion.

One of the problems engineers encountered according to the N.S.P.E. survey was the uncertainty regarding their status as an engineer in a manufacturing organization. One aspect of his status is indicated by the titles used for the positions held by various individuals in an organization. As a result of the indication of the importance of the use of appropriate engineering titles the National Society has devoted considerable time and effort to a study of this problem. As a result of a report made by the Engineers-in-Industry Committee at the October, 1957, meeting of our Board, a policy regarding engineering titles was adopted. Copies of this policy have been distributed to many industrial organizations for their information and use. It is believed that the acceptance of this policy by industrial organizations will contribute to greater stability of engineering staffs. In this statement of policy it was urged that industrial organizations use engineering titles for only those positions in which the person normally employed is either (1) a Registered Professional Engineer or an Engineer-in-Training, (2) a graduate of an accredited engineering curriculum or (3) employed in a position that is defined under the Taft-Hartley Law as a position of a professional employee. This policy statement, as I have indicated, has been widely distributed and it is in constant use by many of our State Societies and Chapters in their work with industrial organizations in their communities. It is my personal belief that this action of our Board of Directors and the distribution of this information by our members and our State Societies and Chapters will contribute a great deal to the improvement of the status of the engineer.

A third study and report by the Engineers-in-Industry Committee is entitled "The Criteria for Professional Employment of Engineers." This publication was copyrighted in 1956 and its objective is to assist both industry and the individual engineer to obtain a better understanding of employment practices so that each may profit from this better knowledge. This publication is divided into two parts. The first part is the criteria for the employers, and in this part there are sections on recruitment policies; indoctrination; technical, administrative, professional and personality development of the individual; also company practices. The second part of the publication is the criteria for the individual engineer, and it includes sections dealing with the application for employment, interview, indoctrination, and technical, administrative, professional and personality development of the individual as well as company practices. There has been an extensive distribution of these pamphlets and they are available at a price of approximately \$0.25 each. This publication we consider another important contribution to the assistance of industry and engineers in achieving a more satisfactory employment relationship.

A fourth publication which we consider of considerable interest to Engineers-in-Industry is called the "Q and A" publication or "Questions and Answers about Registration for Engineers in Industry." This publication has resulted from a careful examination of the questions asked most frequently by the Engineer-in-Industry. This publication is available from the National Society Office. Along with this "Q and A" publication there has been prepared an open "Letter to Management" by the Society in which it is the desire of the profession to clarify for management the importance and the value of registration for engineers employed in industry. Copies can be obtained from the N.S.P.E. Office in Washington.

A fifth type of activity which I believe may ultimately prove to be the most important one that the National Society has been engaged in, is the selection of a Board of Distinguished Consultants to the President of the National Society of Professional Engineers. Through the very helpful assistance of Granville Read, Chief Engineer of the DuPont Company, we have established this Board of Distinguished Consultants through the cooperation of nine other distinguished officials of an equal number of manufacturing corporations in which many engineers are employed. It is the hope in establishing this Board that through this technique the National Society may have the advantage of the long range planning of industry interpreted in its ultimate effect upon the engineers employed in industry. We believe that the plans for future manufacturing methods and future manufacturing organizational structures, if carefully examined and reviewed by individuals concerned with this function for their industry, can make a major contribution to the engineering profession's preparation for changes that may occur within the organization of which they are a part. Apparently engineers are increasingly being identified with management and therefore we think that with the background of information available through this Board, the young engineer may increase his effectiveness as a member of the industrial team. In making the engineer a more effective member of the industrial team, it is our belief that this will, in part, increase the security of this nation because of the improved methods that will be used and the improved communications that result from this understanding of industrial problems and operations. Since engineering plays such an important part in the development and planning of new products, it is believed that this action can make a major contribution to the economic well-being of our nation.

This Board of Distinguished Consultants at the present time is composed of ten men who hold positions of Vice-President or its equivalent in ten major manufacturing organizations. Their first report to the Society will probably be made at the Annual Meeting in New

York in June. They have held one meeting and a second meeting is scheduled for April 17.

For specific actions by an industrial organization in implementing policies that recognize many facets of professionalism, I urge you to read "The Dow Story" by H. P. Cooper in the December 1955 issue of "The American Engineer." Mr. Cooper discusses nine items included in the Personnel Manual of the Engineering Department of the Dow Chemical Company Texas Division. Those nine items are:

1. Professional registration is encouraged.
2. Registration is a requirement for advancement to classifications above Design Engineer.
3. Each engineer must place his professional seal on his work.
4. Semi-annual personnel reviews are conducted to increase supervisory knowledge of each engineer's professional progress.
5. Membership in technical and professional societies is encouraged.
6. Duties and responsibilities are occasionally changed.
7. The engineer is kept informed of department and company activities and is given an opportunity to become familiar with the production plants.
8. Young engineers are trained for advancement in the department.
9. Job stability is assured.

Summarizing, I want to emphasize that the maintenance of a strong economic system is our first line of defense and the Engineer-in-Industry plays a central role in achieving this objective. There is far more community of interest between management and the professional engineer than there is conflict of interest. Research in Career Satisfaction shows that challenging work, opportunity for advancement and financial remuneration rank in that order in the opinion of engineers as factors in creating satisfactory employment. N.S.P.E. has adopted a policy statement regarding engineering titles to assist industry in the removal of undesirable practices. A third publication "The Criteria for Professional Employment of Engineers" provides helpful guidance to both the employee and the employer regarding the employment of engineers.

The fourth publication selected from many pamphlets and papers published by N.S.P.E. concerning the Engineer-in-Industry is the booklet giving the most often asked questions (as well as the answers) about registration.

The last item discussed has been the Board of Distinguished Consultants. We hope that through this activity the engineering profession may have the advantages of long term forecasts of industrial changes. This will enable the engineering profession to adjust more efficiently to new conditions.

74TH BOARD OF DIRECTION MEETING APRIL 30, 1959

Twenty-eight present: seven absent.

1. Board rules that Introductory Members will not be counted on chapter representative quotas.
2. 1959 Convention Committee recommends future conventions be operated by a State Committee, with excess funds kept solely for convention use. Board voted approval.
3. Thirty-four applicants for membership accepted.
4. Chapter Activities Committee report accepted on recommendation that no adjustments in Chapter dues payments through ISPE headquarters be made until net change in membership, due to transfers of members who pay Chapter dues, exceeds 8%; then, new chapter to receive 100% of dues of member transferring between December 1 and June 30, and 50% of dues of member transferring between July 1 and November 30.
5. Publications Committee recommends formation of a not-for-profit organization requiring \$30,000 initial capital to publish ILLINOIS ENGINEER. The Board referred to new Publications Committee for additional study.
6. The Ethics and Practice Committee presented a report of an investigation in connection with proposals by engineering firms for services for a water treatment plant in an Illinois city. Recommendations of the committee were that four firms or individuals be reprimanded for engaging in competitive bidding practice and one individual be advised that he violated the spirit of the Canons of Ethics by doing consulting work in a field directly related to that in which he sells equipment. The Committee further recommended that the Fees and Salaries Committee be asked to study the possibility of clarifying the Schedule of Recommended Fees by stating specifically that contingent services are not to be furnished. The Board accepted and approved the Committee's recommendations.
7. Petition for the formation of Western Chapter (Quincy) along with proposed Constitution and By-laws, was approved by the Board, as was a petition for the formation of a chapter in the Kankakee area.
8. Peoriaarea Chapter Auxiliary Constitution revision request was approved, as were amendments to the North Shore Chapter Constitution.

74TH ANNUAL MEETING MAY 1, 1959

Committee reports as printed and distributed in an Annual Reports book, were accepted and filed, with only minor revisions or additions to some of them.

The 1961 ISPE Convention will be held in Peoria.

The Convention body went on record as supporting and concurring in the action of the Executive Committee in regard to H.B. 366 (amendment to Professional Engineering Act to allow corporate practice), which opposed the original draft and offers an amendment which would allow practice of engineering by a corporation providing the Chief Executive Officer or Managing Agent is registered under the P.E. Act and that a majority of the stock is owned or controlled by Professional Engineers registered under this Act.

75TH BOARD OF DIRECTION MEETING MAY 2, 1959

President Magowan announced Committee appointments for the coming year, which were approved by the Board.

ISPE's group life insurance proposal from New York Life Insurance Company was deferred to Board meeting of June 6.

Proposed 1959-60 budget of \$36,000 approved by the Board.

Past President Frank Edwards was elected as the Society's fourth National Director.

Executive Director Goddard was employed for the coming year, with an increase in salary.

Northwest Suburban Chapter boundaries approved. North Shore Chapter boundaries approved with additional description.

Constitution and Bylaws Committee asked to consider recommendation of lowering age limit of Affiliates (now 35 years of age).

Budget and Finance Committee asked to study possible increase in State dues.

ISPE endorsed National policy on student chapters and referred matter to the Education Committee for implementation.

Executive Committee authorized to appoint legal counsel to represent Society when needed.

Board voted for financial study of Membership Directory issue of ILLINOIS ENGINEER.

Local Chapter publications to be given award through Public Relations Committee.

Policy Research Committee to formulate policies for consideration by the Board.

McDougal-Hartmann Co.

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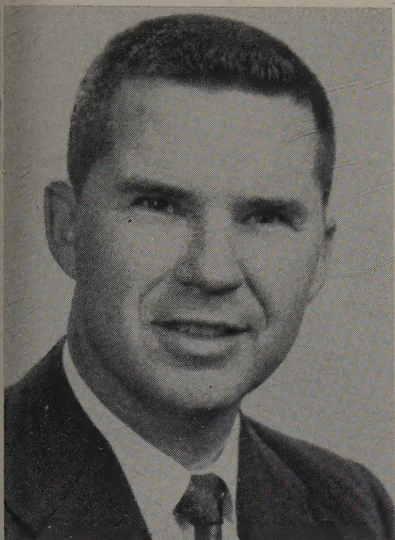
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PEORIA, ILLINOIS

I.I.T. ADOPTS A "UNIT OP" APPROACH TO SANITARY ENGINEERING EDUCATION

By LINVIL G. RICH, P. E., *Associate Professor, Illinois Institute of Technology*

Few sanitary engineers would recognize the graduate curriculum in sanitary engineering recently introduced at the Illinois Institute of Technology. Courses covering such diverse topics as colloidal stability, chemical structure of proteins, fats, and carbohydrates, heat



Linvil G. Rich

transfer, and diffusion processes, bear little resemblance to courses offered in most curricula. The practitioner would find it difficult to relate the integrated treatment of subject matter with the "compartmentalization" characterizing his own educational experience. In fact, many of those who were schooled in the art of engineering may well suspect that

the I.I.T. curriculum has been designed to turn out something other than a sanitary engineer. If they have in mind a sanitary engineer of the conventional variety, their suspicions are justifiable.

What prompted IIT to adopt such a radical change in sanitary engineering education? What are the objectives of the new curriculum? Where will graduates of the program function best?

Prior to World War II, the scope of sanitary engineering was limited primarily to water supply, sewerage, and general environmental sanitation. The civil engineer by virtue of his activities in municipal engineering had fallen heir to these responsibilities. A person wishing to prepare himself specifically for sanitary engineering enrolled in a standard undergraduate civil engineering curriculum garnished with a course or two in the practice of water supply and sewerage. Any graduate work taken consisted of little more than additional hydraulics, some hydrology, and a course in water and sewage analyses. Process design, if included, was entirely empirical. As long as treatment processes remained simple and efficiencies of low order were acceptable, the civil engineer with this background functioned with reasonable effectiveness.

After the war, sanitary engineering expanded suddenly to include responsibilities in the areas of industrial waste treatment, stream sanitation, air pollution

and radiological health. Without exception, these responsibilities required an educational preparation quite different from that of the average engineer in the field. Moreover, with the advent of more complex processes in water and sewage treatment, empiricism could no longer be relied upon to meet efficiency goals. In short, the profession faced a dilemma. Sanitary engineering had out-distanced the practitioner.

Academic institutions moved immediately to rectify the situation. In quick succession, course after course were added to graduate curricula, each designed to cover a new area of sanitary engineering activity. Catalogue listings of courses available to the student grew to impressive proportions, and, on the surface, it appeared that the gulf between the sanitary engineer and his profession was being bridged. It soon became clear, however, that such optimism was unwarranted.

First of all, curricula of many schools had become too large. Finding it impossible to take all the courses in the 9 to 12 months normally allotted to the Master of Science Program, the student was forced to specialize either in sewage and industrial waste treatment, water supply, air pollution, or in some other area of sanitary engineering. Specialization as a terminal polish to a broad educational background is highly desirable, but concentration alone, without a broad background, severely limits the effectiveness of the novice even within his specialty.

Furthermore, emphasis still was placed on the practice of engineering with little attention paid to basic principles. In areas where methods and practice had not time yet to crystalize, courses seldom went beyond a survey coverage. It is not surprising that research and imaginative design have been lagging in most areas of the profession.

These weaknesses are now causing major concern within the profession. As a result, considerable thought is currently being directed toward strengthening sanitary engineering curricula. There is a lack of agreement as to just what specific changes should be made, but it is generally agreed that greater emphasis should be placed on basic principles. Some schools are attempting to strengthen their curricula either by instituting one or two new courses or by making modifications within the framework of courses already carried in the catalogue. A few other schools, the Illinois Institute of Technology included, have taken stronger measures toward this end.

Illinois Tech abandoned completely a graduate sanitary engineering curriculum consisting of conventional courses in water treatment, sewage treatment, industrial wastes and stream sanitation, and in its place instituted an entirely new and different type of curriculum. The new curriculum has, as its core, four courses. Briefly, the composition of these courses is as follows:

SANITARY SCIENCES—A lecture course covering those

principles of organic chemistry, biochemistry and physical chemistry which are basic to sanitary engineering analyses.

SANITARY ENGINEERING ANALYSES—A lecture and laboratory course emphasizing the derivation and analysis of data for use in national design.

UNIT OPERATIONS AND PROCESSES IN SANITARY ENGINEERING—A lecture course covering the rational design of unit operations and unit chemical and biological processes employed in sanitary engineering.

DESIGN OF SANITARY ENGINEERING TREATMENT PROCESSES—A lecture and design laboratory course dealing with the application of unit operations and unit processes to the synthesis of over-all treatment processes.

A thesis based on laboratory research and such extra departmental courses as bacteriology and advanced mathematics or statistics fill out the normal program for a Master of Science degree.

The curriculum outlined above is unique in two respects. First, a structural rather than a functional treatment is applied to design. By breaking down treatment processes into the component unit operations and unit processes, duplication of topic material is avoided and more time is available to cover other operations and process ordinarily not considered.

For example, sedimentation is an operation common to water, sewage, and industrial waste treatment processes. Instead of considering sedimentation in its individual relationship to each application it is studied as a unit operation. Experience and a thorough understanding of sedimentation principles will equip the engineer to make the modifications necessary for any specific application. Other operations and unit chemical and biological processes employed in sanitary engineering lend themselves to the same type of presentation. Time saved through an integrated coverage, permits the inclusion of gas transfer, heat transfer, evaporation, drying and other operations ordinarily not considered in sanitary engineering courses but now used frequently in practice, particularly in the industrial wastes treatment. The unit operations and processes approach has been employed in chemical engineering education for years with considerable success.

Another feature distinguishes the new curriculum from the more conventional variety. Heavy emphasis is placed on scientific fundamentals underlying process engineering. The topic material covered in *Sanitary Sciences* and *Sanitary Engineering Analyses* lay a strong foundation upon which can be constructed a thorough understanding of design principles. Consequently, the student has an opportunity to cover the entire field of sanitary engineering, perhaps not in detail, but at least in terms of fundamentals. Specific practices can be learned as he gains practical experience in the field.

The I.I.T. curriculum has as its objective a creative engineer who, with a modicum of experience, can

function effectively in any branch of sanitary engineering; one who can take a particular water or waste into the laboratory, analyze it, and then design a treatment process on the basis of the laboratory evaluation. Not only will such an engineer be equipped to solve current problems in the field of sanitary engineering but he will be able to grasp new technology as well. Furthermore, he will be fully capable of applying to his field the tools developed by other engineering professions.

The new curriculum was initiated in the fall semester of 1957. Subsequently, one course has been taught each semester. These have been offered in the evening division to accommodate practicing engineers in the Chicago area who seek graduate work in sanitary engineering. The future of the 15 engineers presently enrolled in the program will be followed with interest, for, after all, their performance provides the only valid yardstick with which the success of the program can be measured.

CONVENTION PICTURE IDENTIFICATION

1. Capt. Richard Laning and Larry Goddard.
2. Speakers' table, Thursday luncheon.
3. Mr. and Mrs. George Booth, Jr. (DuKane Chapter)
4. Mrs. Roger Ericson watches Tom Landes pay off his membership contest debt by pushing husband Roger Ericson in Wheelbarrow Parade.
5. Portion of speakers' table at banquet on Friday.
6. Dr. Clark Dunn, NSPE President, addresses ISPE group at Friday luncheon.
7. James D. Piper, Vice President of Portland Cement Association, speaker at Thursday luncheon.
8. Mrs. John Housiaux and Mrs. Larry Goddard watch C. J. McLean examine stove at Wagon Wheel.
9. Mayor Benjamin T. Schleicher of Rockford.
10. Past President C. W. Klassen, Roy Kastner and Robert Anderson.
11. Foursome for bridge during ladies' activities includes Mesdames Margaret Shute, Helen Wells, Helen Roy and Inez Hammes.
12. Waiting for buffet at the Wagon Wheel on Thursday evening are, l. to r., Noel Thomas, Kenneth Welton, Pat Murphy, and Mary Watt.
13. John Kammerer, Mrs. Marie Gasko, C. R. Miller and Mrs. Art Feickert.

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ENGINEERING FUNDAMENTAL TO WALKER PROCESS SUCCESS

By JOHN FAST, President DuKane Chapter



Walker Process' modern factory at Aurora houses engineering, laboratory and manufacturing facilities

The Illinois Engineer continues its industry series by featuring Walker Process Equipment Inc. as an interesting firm with an unusual product, a rapid growth rate, a high degree of Engineering utilization and an active support of the Illinois Society of Professional Engineers.

Walker Process, located in the widely known city of Aurora, Illinois in the Fox River Valley, is an outstanding example of the successful development and growth of a private industry in our free American economic system. This firm, founded only thirteen short years ago in 1946 by a group of five Engineers and an administrative officer, has mushroomed from a basement operation to one of the present-day leaders in its field. Needless to say, the original Engineer-founders, Pres. J. D. Walker, D. E. Dreier, J. R. Sperry, A. W. Nelson and C. A. Obma, and Secretary-Treasurer Frank Voris, possessed not only a wealth of experience in the Sanitary Engineering field, but also assumed an optimistic foresight of success in the very questionable economic period immediately following World War II.

All operations now emanate from a handsome modern plant; twice enlarged since its initial construction in 1953. One important factor in its successful rise can be attributed to the coordinated control possible with all phases of the firm from management and administration through development, design, production and service housed under one roof.

Walker Process produces custom designed equipment for the treatment of water, sewage and industrial waste. More specifically, this is mechanical equipment which is generally installed in concrete or steel tanks for process treatment to produce a potable water for human consumption, or produce an effluent from sewage or indus-

trial waste that can safely be discharged into our water courses. The importance and demand for this type of equipment is becoming more pronounced as more and more potable and clear water is required for our rapidly growing municipalities and industries, and because public reaction and necessity demands elimination and prevention of stream pollution.

While the basic concepts of treatment processes were established years ago, many new developments and improvements have been incorporated into modern equipment produced by Walker Process; and continual research projects are being pursued to further develop new and better process treatment methods.



J. D. Walker, President, discusses equipment design and application for a large sewage treatment plant project with J. J. Fast, Project Engineer, left; D. E. Dreier, Chief Engineer, second from right; and F. S. Weir, right, in charge of Application Engineering.

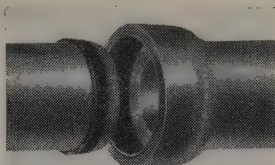
(Continued on Page 12)

**"We stopped infiltration
and minimized
sewage pumping costs"**

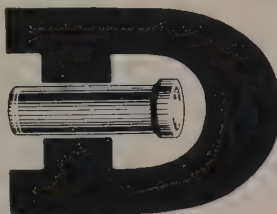


Ted Moore,
Superintendent,
Sewer & Water Dept.
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Equipment designed and manufactured by Walker Process is installed in cities and industries throughout the U.S. plus numerous installations in Canada, Puerto Rico and South American countries. In addition, a going Australian and New Zealand outlet has recently been established by the foreign sales division.

All sales are formulated by specialized, high caliber engineering representatives located in all sections of the country and conducted under the general supervision of the Sales Engineers from the Aurora office.

Probably no other type of private industry utilizes a higher ratio of professional engineering in its management, sales, design and production functions. The special nature and important application of its products makes it mandatory that sound, reliable engineering be employed in all phases. Close cooperation is also required with the various Consulting Engineering firms who have the responsibility for the overall design and construction of the treatment plant process and structure; and, of equal importance, is close liaison with the Engineering staff of the various governmental agencies who must approve the process designs on public projects. If it were necessary to define the Walker Process engineering field in one category, it would have to be so classified as Sanitary Engineering; but the increasingly complex concepts and aspects of process treatment require the closely coordinated ability and action of all the basic branches including electrical, chemical, mechanical and civil.



Engineering drawings required for manufacture, assembly and field erection of the equipment are prepared in this modern drafting room.

Engineers in this Department handle application engineering of preliminary inquiries, along with all estimates and bids.

While some of the small equipment is shipped as a completely assembled unit ready for operation, most of the jobs represent enormous size after final assembly and therefore require shipment in sub-assemblies with field installation and assembly by the mechanical or general contractor. For example, a thickener mechanism for



The Walker Process Design Engineering staff handles the multitude of problems involved in the development, design, final application engineering and manufacture of a broad line of process equipment for a wide variety of municipal and industrial water and wastes treatment plants.

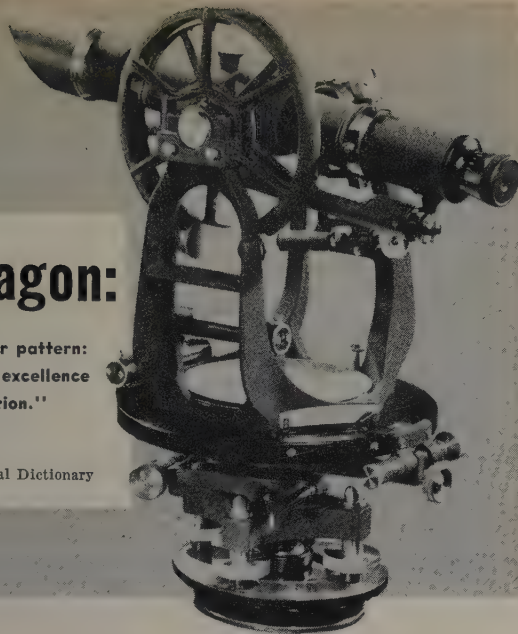
removing solids from millions of gallons per day of fluff water from a steel mill will often measure over 10' in diameter with up to 100 tons of special steelwork after final assembly. Three 200' dia. x 30' deep river water desilting basins furnished to the Omaha Municipal Utility District use over 200 tons of steel in the thickener mechanisms and the three mammoth 18-ton turntable drives had to be each shipped on a separate flat car.

Walker Process not only prides itself on its industrial achievements, but also feels an equal degree of satisfaction through its promotion of the advancement of Engineering professional status. Although the firm has always supported the Illinois Society of Professional Engineers to the greatest extent, of even greater importance is the individual active participation of its Engineers in the local Chapter and State level of the organization. The entire engineering staff, except the latest graduate engineers, is registered or eligible for registration and over 75% belong as corporate members to the I.S.P.E. and N.S.P.E. (The goal is 100% membership.)

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Egyptian Chapter Plans for the Future

Shown above, l. to r., at a meeting on April 23, are Howard Mendenhall, speaker; Rex V. Woodward, President; Maurice Webb, Secretary-Treasurer; and Fred Perrson, Past Secretary-Treasurer. Fred Curl, Vice President, is not shown in the picture.

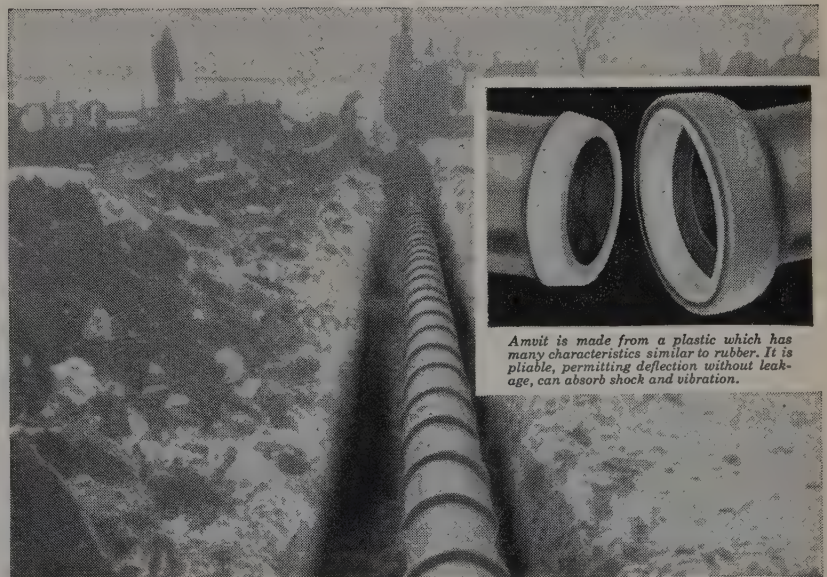
On May 19, 1959 Capital Chapter lost one of its members when Rex McCann was killed in an automobile accident near Jerseyville. Rex was well known in Central Illinois for his work as an Engineer with the Illinois Division of Highways for 15 years. In recent years he helped organize and served as president of McCann and Co., Inc., highway and bridge contractors. Mr. McCann's untimely death is a great loss to his family, his many friends and the community. Many highway projects, constructed under his supervision, will serve as monuments in his memory.

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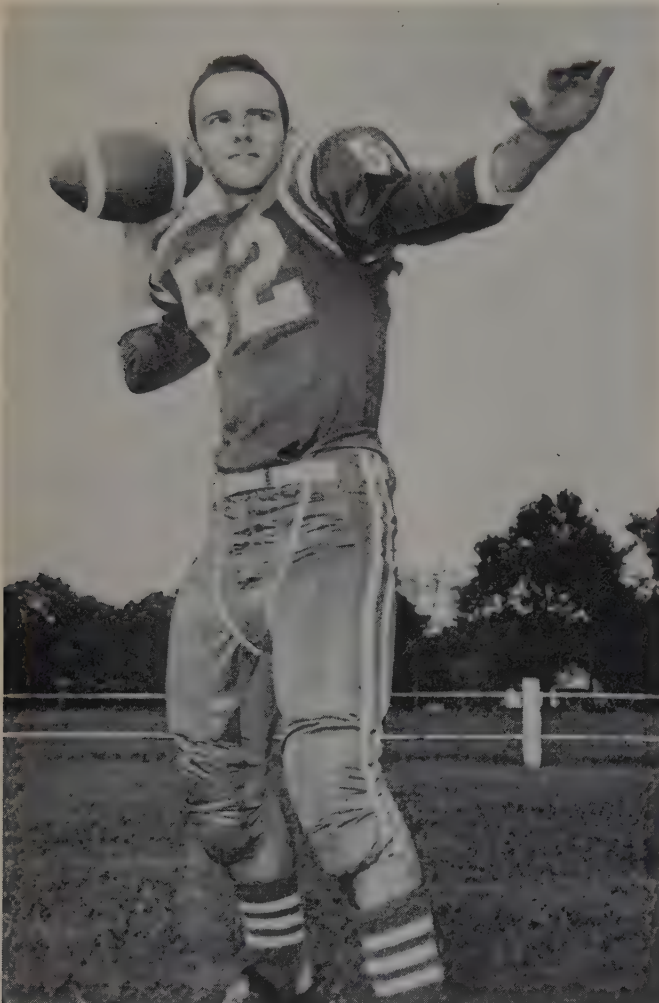
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WELL ROUNDED ILLINOIS YOUTH WINS NSPE-ARMCO SCHOLARSHIP

Sponsored by Champaign Chapter

Raymond Arthur Beazley, a mild-mannered high school Senior from Arcola, Illinois, a town of 2,100 population, won an Armco-NSPE Engineering Scholarship Award last week. Young Beazley was described by his principal, L. R. Sitter, as being an exceptional young man. His accomplishments cover the field. He was quarterback and co-captain of his football team, being a three-year letterman. He lettered in track for two years and last year was on the basketball team which went to the State finals.



Co-Captain in Football

Art Beazley was not content with athletic honors but has participated in music and dramatics. He plays the baritone sax in his high school band, of which he is President, and during the entire four years of high school music competition he has placed first in solo competition for state high schools. He had leading roles in the Junior and Senior class plays. In his Freshman year young Beazley was Vice President of his class; as a Sophomore he was President; in his Junior year he was Vice President of the Student Council, and this year, as a Senior, he was President of the Student Council.



Math Teacher Webb, Beazley, and High School Principal Sitter.

Because of his quiet manner and exceptional popularity among the students he won the Sons of America Revolutionary Award for outstanding Senior leadership. For his musical ability he was awarded the John Philip Sousa Band Award as an outstanding member of the band.

Art also finds time to work part time with a local funeral home, and like all young male Americans has a steady girl friend. Linda Stump has been his "steady" throughout most of his high school days. He stated that "I have been dating Linda for a long while and haven't found any reason to break up." She is a very cute girl and they are most typical high school sweethearts.



Outstanding Musician



Beazley and Girl friend Linda Stump, attend School Prom.

The faculty at Arcola High School is quite proud of the honor he has brought to himself by winning the four-year engineering scholarship. Art has already applied for and been accepted for enrollment at the University of Illinois Engineering School. Mr. Sitter observed that Art may find competition at a large university more keen than in a small-town high school; however, he stated, "I am confident he will do well because he has the natural desire to do good work, and I am sure he will hold his own wherever he goes."

Art and his parents accept the award gratefully and with humility. The family is an average small-town family, and the scholarship will greatly assist the father in meeting the expense required for Art to attend the University. Mr. Raymond T. Beazley, the father, was born in England and is employed with the Mattoon, Illinois Democrat Gazette, a daily newspaper.

Perhaps the greatest tribute given to Art Beazley by his principal was that he is in regular attendance at Sunday School and conscientiously participates in Church activities.

GOVERNOR AND LEGISLATURE RECOGNIZE ART BEAZLEY

Last week the House of Representatives of the Illinois Legislature took time out from its busy schedule to extend recognition to Art Beazley by introducing him to the House in session. Representative Paul Powell, Speaker of the House, relinquished the podium to Representative Paul Graham who introduced young Beazley. Representative Graham stated that Illinois should be proud of a young man who stood first among many outstanding participants for the honor. Also, in choosing the University of Illinois to use the scholarship the Legislature should also be pleased. Beazley thanked the Representatives for their kindness and stated that he would attempt to do as well in college activities. He was greeted with a standing round of applause.

After being received by the Representatives, Governor William G. Stratton greeted Beazley and his family in the Governor's office. He congratulated Art for his fine accomplishments; and when informed that the University of Illinois had been chosen, the Governor stated "Let me shake hands again for that fine decision."

The Illinois Society of Professional Engineers arranged for Art and his parents to visit the Capital city.

After the visit to the State Capitol Building, Mr. A. R. Senter of Armeo Drainage & Metal Products, Inc., Division in Springfield was host to Art and his family at lunch. LeVerne D. Hudson, Vice President of ISPE, and Larry Goddard, Executive Director of ISPE, accompanied the Beazleys during the day's visit.



Art Beazley is congratulated by House Speaker Paul Powell after Beazley was introduced to the Legislature. Rep. Paul Graham of Mattoon looks on.

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Mr. A. R. Senter, Manager of Armco Drainage and Metal Products of Springfield, congratulates Art Beazley and gives him a slide rule to use in his engineering education.

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AIRPORTS • PARKING LOTS**

**MODERN
soil-cement**

PORTLAND CEMENT ASSOCIATION

111 West Washington Street, Chicago 2, Illinois. A national organization to improve and extend the uses of portland cement and concrete